U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME**:** *Astragalus tortipes*

COMMON NAME**:** Sleeping Ute milkvetch

LEAD REGION**:** Region 6

INFORMATION CURRENT AS OF**:** April 9, 2010

STATUS/ACTION:

___ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status
___ New candidate
_X_ Continuing candidate
___ Non-petitioned
_X_ Petitioned - Date petition received: **May 11, 2004**
_ 90-day positive - FR date:
_ 12-month warranted but precluded - FR date:
_ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

a) Is listing warranted (if yes, see summary of threats below)? **YES**

b) To date, has publication of a proposal to list been precluded by other higher priority listing actions? **YES**

c) Higher priority listing actions, including court-approved settlements, court-ordered and statutory deadlines for petition findings and listing determinations, emergency listing determinations, and responses to litigation, continue to preclude the proposed and final listing rules for the species. We continue to monitor populations and will change its status or implement an emergency listing if necessary. The "Progress on Revising the Lists" section of the current CNOR (*http://endangered.fws.gov/*) provides information on listing actions taken during the last 12 months.

___ Listing priority change
Former LP: ___
New LP: ___

Date when the species first became a Candidate (as currently defined): **February 28, 1996**
___ Candidate removal: Former LP: ___
___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
___U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to

conservation efforts that remove or reduce the threats to the species.
___ F – Range is no longer a U.S. territory.
___ I – Insufficient information exists on biological vulnerability and threats to support listing.
___ M – Taxon mistakenly included in past notice of review.
___ N – Taxon does not meet the Act's definition of "species."
___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY**:** Flowering plant, *Fabaceae*

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Colorado

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE**:** Montezuma County, Colorado

LAND OWNERSHIP: *Astragalus tortipes* (Sleeping Ute milkvetch) occurs solely on Ute Mountain Ute Indian Tribal lands. The species' main occurrence is bisected by the Towaoc Canal, which was constructed by the Bureau of Reclamation (Bureau). The Bureau has jurisdiction over the canal itself and associated rights-of-way. The canal is approximately 3 meters (m) (10 feet (ft)) wide where it bisects the milkvetch occurrence and the road right-of-way is approximately 6 m (20 ft) wide, including shoulders. The Dolores Water Conservancy District and the Ute Mountain Ute Tribe share operation and maintenance duties.

LEAD REGION CONTACT**:** Justin Shoemaker, (303) 236-4214

LEAD FIELD OFFICE CONTACT**:** Ellen Mayo, (970) 243-2778

BIOLOGICAL INFORMATION

Species Description

A. tortipes plants are perennial, robust, 60 to 80 centimeters (23 to 32 inches (in.)) tall, arising from a taproot with a subterranean root crown. Leaves have 9 to 15 leaflets. Flowers are large, nodding, with 10 to 25 per stem, with a banner 14 to 18 millimeters (mm) (0.55 to 0.7 in.) long and 6 mm (0.2 in.) wide, and are lemon yellow. Pods are free of hairs, laterally compressed, with twisted pedicels (fruit hyper-reflexion) that cause the pods to stand erect in a manner unique within the genus *Astragalus*. The Latin name means twisted foot (Anderson and Porter 1994, p. 118).

Timing of initiation of spring growth varies from year to year in response to favorable temperature and moisture. The life cycle from flowering to fruiting is completed in about 2 weeks.

Taxonomy

A. tortipes was first discovered in 1985; the type specimen was collected in 1989. It was

published as a new species in 1994 (Anderson and Porter 1994). At the time of publication, this was the only documentation of fruit hyper-reflexion in the genus *Astragalus* (Anderson and Porter 1994, pp. 121, 123). Cladistic analysis shows *A. tortipes* to be closely related to *Astragalus Schmolliae* (Schmoll milkvetch), a narrow endemic of pinyon-juniper woodlands from 2,060 to 2,120 m (6,758 to 6,955 ft) elevation at Mesa Verde National Park, about 25 kilometers (km) (15 miles (mi)) to the east.

Habitat

A. tortipes grows at scattered sites on the lower slopes of ridges and knolls between 1,585 and 1,768 m (5,200 and 5,800 ft) elevation in a mixed desert scrub community with several other regional endemics such as *Eriogonum clavellatum* (Comb Wash wild buckwheat) and *Astragalus cronquistii* (Cronquist milkvetch) (Anderson and Porter 1994, p. 119). It is restricted to the Smokey Hills horizon of the Mancos Shale Formation. The Smokey Hills are capped with river gravels from an ancient river, forming an inverted landscape that represents the entire range of *A. tortipes*. The plants are found on northern aspects of knolls and ridges and in a few drainages between the knolls (Colyer 2000, p. 2).

Historical Range/Distribution

The species is known from only two occurrences (referred to below as #1 and #2) on the Ute Mountain Ute Indian Reservation in Montezuma County, southwestern Colorado. The first occurrence was found in 1985 (Anderson and Porter 1994, p. 116). In 1989, the second occurrence was discovered about 3 miles to the southwest of the first occurrence (Colyer 2000, pp. 1, 10). Rare plant inventories in the surrounding area have delineated the distribution of other rare and listed species, but no additional occurrences of *Astragalus tortipes* have been found (Anderson and Porter 1994, p. 116). Distribution of plants within the two occurrences was wider in the past, because portions of two plant sites in occurrence #2 were removed during irrigation canal construction, and occurrence #1 was disturbed by digging a borrow pit (Colyer 2000, p. 4). Plants were found to remain around the edges of the disturbed sites (Colorado Natural Heritage Program (CNHP) 2006, p. 5).

Current Range/Distribution

This species is found only on the Ute Mountain Ute Indian Reservation on the southeastern flank of Sleeping Ute Mountain, approximately 24 km (15 mi) southwest of Cortez, Montezuma County, Colorado. The known range has not been extended since 2000 (CNHP 2006, p. 1, 4).

A field survey to determine its range, population size, and distribution was conducted in 1989 (Anderson and Porter 1994, p. 116). General botanical surveys in the only known location with similar habitat outside the reservation (at the foot of the Henry Mountains in Utah) did not locate the species (Neese 1980, and Heil et al. 1992, as cited in Anderson and Porter 1994, p. 119). In April and May 2000, surveyors found the milkvetch on 24 of 30 knolls, ridges, or drainage areas surveyed over a 26 km^2 (10 mi^2) area (Colyer 2000, p. 3). Though the area encompassing the species' range is about 25,900 hectares (ha) (64,000 acres (ac)), the plant only occurs on 202 ha (500 ac) within the range (Colyer 2000, p. 3); about 4 ha (10 ac) at 1 site in occurrence #1 and 198 ha (490 ac) at 23 sites in occurrence #2 (CNHP 2006, p. 1). With knowledge of the habitat requirements, the surveyors estimated that the plant's range could extend another 0.8 km (0.5 mi) to the southeast on Ute Mountain Ute land.

Population Estimates/Status

A total of 3,744 plants were counted in 2000 (Colyer 2000, p. 4); 297 plants were located in occurrence #1 and 3,447 plants were located in occurrence #2 (CNHP 2006). The total number of plants was estimated to be 2,000 to 3,000 individuals in 1991 (Anderson and Porter 1994, p. 124), indicating an increase in plants from 1991 to 2000. We have not been granted access by the Tribe to conduct surveys since 2000, thus we have no precise current information on population size.

In 2008, the environmental program director for the Tribe reported that the status of Sleeping Ute milkvetch has remained unchanged since the 2000 report (Clow 2008, pers. comm). In 2009, the Tribe reported that the Sleeping Ute milkvetch population was healthy (Greenwood 2009, pers. comm.). Although plant counts have not been updated, the population assessment is based on field visits and personal observations that the plants. Their habitat does not appear to have changed or been disturbed since the surveys reported in 2000.

THREATS

A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

The construction of the Towaoc Canal from 1991-1993 through the western end of *A. tortipes*' range cut through the habitat at 3 of the 23 sites in occurrence #2 and fragmented the plant's distribution. The canal divided each of these sites into two remnants that continued to support plants in 2000 (Colyer 2000, p. 4). Increased accessibility to *A. tortipes*' locations in relation to the Towaoc Canal could potentially threaten this species and its habitat. Previously, this area was not accessible by vehicle, but canal construction has opened the area to vehicle use and associated ground disturbance. Specific impacts resulting from vehicle use have not been reported. The remaining plant populations adjacent to the canal were reported to be stable in 2000 (Colyer, p. 4). Habitat fragmentation in relation to the Towaoc Canal may negatively impact the remaining adjacent *A. tortipes*' populations. Some limitation of seed dispersal may exist east and west of the Canal with an unknown impact to the milkvetch. Pollinators (such as bumblebees, sweat bees, large muscid flies, and wasps) (Colyer 2000, p. 4) can likely fly across the Towaoc Canal and road rightof-way, an approximately 9 m (30 ft) distance, so genetic interchange is still possible, but may be limited.

Excavation of borrow material about 20 years ago destroyed an unknown number of plants in occurrence #1, located 1.6 to 3.2 km (1 to 2 mi) north and east of occurrence #2. The Tribe has not indicated any plans to remove more soil from this site. This borrow pit has since been used as a shooting range. Specific impacts resulting from vehicle access to the shooting range have not been reported. Off-road vehicle (ORV) use on the hills adjacent to the excavated site has destroyed individual plants in the past (Colyer 2000, p. 4). We have no information indicating the size of the plant population in the area prior to disturbance. In 2000, the undisturbed portion of the hill where the borrow pit was dug had the sixth largest plant count, with 8% of the total plants on 4.5% of the total occupied habitat. However, ORV use appeared to be increasing in the area in 2004 (CNHP 2004, p. 3). By 2009, fences were built to restrict vehicular traffic from accessing the plant occurrences (Greenwood 2009, pers. comm.). Actual impacts from ORV use or from installing fences to exclude vehicles are not documented.

Another disturbance of the habitat was a seismic exploration grid that was laid out through the area in 1985 and 1986, with seismic lines through some of the plant sites. Seismic exploration involves heavy trucks, cables stretched across the ground, and drilling holes for explosives. However, no evidence of tracks from the heavy equipment that was driven cross country, or holes in the ground where explosives were inserted, were found during an October 2000 field trip by U.S. Fish and Wildlife Service (Service) and other agency employees.

Oil and gas development is active in the area and may be occurring on Tribal lands, but the Service has received no information from the Tribe to indicate that there is oil or gas drilling or pipeline construction underway or planned within habitat for the plants. The area was classified by the Bureau of Land Management in 1999 as having high potential for oil and gas development. An environmental assessment of oil and gas leasing and development on Ute Mountain Ute Indian Reservation was prepared in 1993 (Bureau of Indian Affairs 1994). The assessment did not address the presence of *A. tortipes* because it was not a listed species. There is potential for development to occur, but the level of certainty is low. Because of its limited distribution, a single development project for oil and gas or agriculture could impact the entire species' range. Development within the species' range would involve well pads, access roads, and underground pipelines that could destroy plants and habitat unless avoidance measures were in place. However, the Tribe says that no development is imminent (Clow 2010, pers. comm.).

The land occupied by *A. tortipes* is adjacent to and accessible from Tribal headquarters, the Towaoc canal, and a major state highway that has recently been widened to add passing zones. The Colorado Department of Transportation has consulted with the Service concerning potential impacts to plant habitat prior to the start of the road projects. Public access to the plant habitat is not permitted by the tribe, but proximity to developed and developing areas could facilitate impacts to this species and its habitat.

A. tortipes occurs a few miles east of an agricultural area (the Ute Farms) being irrigated by the Towaoc Canal. The agricultural area could potentially expand eastward toward the plant habitat in the future. If insecticides or herbicides are applied to future agricultural areas adjacent to *A. tortipes*' sites, pesticide drift could occur and negatively impact the species or its pollinators. Specific information related to potential timing or impacts associated with future agricultural activities are unknown at this time.

B. Overutilization For Commercial, Recreational, Scientific, or Educational Purposes

We are not aware of any overutilization of this species for commercial, recreational, scientific, or educational purposes.

C. Disease or Predation

During the spring 2000 survey, a handful of plants were observed to be clipped off by Gunnison prairie dogs (*Cynomys gunnisoni*). It is unlikely that prairie dog herbivory is more than a minor impact to the species considering the small number of milkvetch clipped off by the prairie dogs, and the small numbers of prairie dogs in the area. Additionally, the prairie dogs and the milkvetch have likely co-existed for hundreds or even thousands of years. Cattle trampling could kill some individuals, particularly along the canal, but this is currently a minor impact, and cattle do not appear to graze on the milkvetch (Colyer 2000, p. 4). In 2009, cattle were not observed trampling or grazing on the plants (Greenwood 2009, pers. comm.). Colyer (2000, p. 5) reported that unknown herbivores had removed the fruits from some flower stalks.

D. The Inadequacy of Existing Regulatory Mechanisms

No local, state, Federal, or Tribal regulations serve to protect or conserve the species at this time. The Ute Mountain Ute Tribe has been drafting a management plan for species at risk that will include monitoring of *A. tortipes* plants and habitat. Release of the final draft plan is expected in 2010 (Clow 2010, pers. comm.). Finalization of the management plan will assist us in better understanding the extent to which the Tribe plans to conserve the species and its habitat.

E. Other Natural or Manmade Factors Affecting its Continued Existence

The highly limited distribution of this species and its small population size make it vulnerable to extinction from stochastic events. Colyer (2000, p. 5) described shorter than usual plants and fewer fruits during a year of extreme drought. Extreme drought has only occurred in 3 of the preceding 70 years. Given the general predictions for drying and warming trends in southwestern Colorado as a result of climate change (Milly et al. 2005, p. 1; Intergovernmental Panel on Climate Change 2007, p. 30), *A. tortipes* will be producing fewer offspring and the population is likely to shrink within the foreseeable future. The plants die back after flowering and fruiting in the spring; they are inconspicuous and easily overlooked for the rest of the year. Avoidance of the plants then becomes more difficult unless management plans and mapping identify the habitat clearly.

The habitat consists of low hills that are surrounded by open range in an area covering only 26 km^2 (10 mi^2). Because of this limited range and accessible landscape (there are no physical barriers such as canyons) a single large-scale development or agricultural expansion in *A. tortipes*' habitat could potentially impact the entire population.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

A conservation agreement was discussed by the Service with the Ute Mountain Ute Tribe and other involved parties in 1999; no agreement was signed.

In a letter to the Service (Heart 2007, p. 1), the Ute Mountain Ute Tribal Chairman stated that the Tribe planned to complete a threatened and endangered species management plan in the spring of 2007. The Tribe had mapped and fenced the area where the plant is found. An effort had been made to remove cattle from the area. Additional measures were being explored to physically protect the milkvetch. The Tribe requested that the species not be listed "because the Tribe has the sovereign right as well as the technical ability to protect the plant." In the future, the Tribe intends to approach the Service for financial assistance to promote the protection of critical species on Tribal lands.

In 2008, a management plan for special status species on Tribal land was in draft form. Surveys to update the status of the milkvetch were planned for 2008 (Clow 2008, pers. comm.).

In 2009, fencing was installed to restrict vehicular use across occupied habitat. Cattle were not trampling or grazing on the plants (Greenwood 2009, pers. comm.).

In 2009, *A. tortipe'* surveys were conducted and plants were doing well. The management plan final draft will be released in 2010 and will include a monitoring program that includes this species, among others (Clow 2010, pers. comm.)

SUMMARY OF THREATS

Destruction of plants by ORVs has reportedly been controlled by fencing the access to the plant's habitat (Factor A), but no specific data is available to indicate the effect on plants or habitat. Local disturbance by users of the shooting range and by ORV use is reportedly under control (Greenwood 2009, pers. comm.). No habitat disturbance by cattle was observed in 2009. While these are positive indications that the species' status is not declining, specific documentation concerning the current status of the plants, condition of habitat, and terms of the species management plan being drafted by the Tribe are not yet available.

The intrinsic rarity of the species, its extremely limited range, and its small population size contribute to the vulnerability of the species (Factor E). Oil and gas development, or agricultural expansion has the potential to cause further decline within a short time. No information is available to indicate that such major projects are imminent threats, but the Tribe could proceed with project planning at any time. Prolonged drought due to climate change could cause the species to decline within the foreseeable future.

Completion and implementation of a conservation and management plan that includes *A. tortipes* would formalize the Tribe's stated intention to protect the plant. Until the plan is in place, the species is subject to potential threats of moderate magnitude.

RECOMMENDED CONSERVATION MEASURES

Finalize the Tribal Threatened and Endangered Species Management Plan for special status species, to include the following:

1. Permanently protect occupied and suitable habitat for *A. tortipes* by making it off limits to activities that damage or destroy plants or that cause the soil to become unsuitable for the plants.

2. Survey all potential habitat during the blooming season to verify occupied areas and the full extent of the species' range.

3. Maintain updated maps of occupied and suitable habitat.

4. Conduct status checks at appropriate intervals to monitor the condition of plants and habitat.

5. Include the species on a list of special resources on the Tribal land.

LISTING PRIORITY

THREAT			
MAGNITUDE	IMMEDIACY	TAXONOMY	PRIORITY
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	**11***
		Subspecies/population	12

RATIONALE FOR LISTING PRIORITY NUMBER

Magnitude: Moderate
A. tortipes should be retained at a listing priority of 11. Available information from surveys in 2000 indicates that the species could be stable, but we have only personal communications to confirm the status. In 2000, 3,744 plants were recorded on a specific substrate within a small overall range. Habitat disturbance by ORV traffic has occurred at low to moderate levels, but fencing was installed to restrict vehicular use across occupied habitat in 2009, and cattle were not trampling or grazing on the plants (Greenwood 2009, pers. comm.). The primary threats are extremely limited range and small population. Also of concern is the lack of available monitoring data or documented protection by the Tribe. Oil and gas or agricultural development

is a potential threat that could impact the entire range of the species. However, we are not aware of any planned development in *A. tortipes*' habitat. The limited available information we have on this species suggests that existing threats are moderate to low at this time.

Imminence: Non-imminent
Previous threats from a borrow pit excavation, ORV use, irrigation canal construction, and a prairie dog colony have had minor impacts that reduced the range and number of plants by small amounts. Oil and gas development is a potential threat that could become imminent within a short time; however, we are not aware of any planned development. We conclude that the threats to this species are non-imminent.

RATIONALE FOR CHANGE IN LISTING PRIORITY NUMBER

Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed? YES.

Is Emergency Listing Warranted? NO. There is no new information on the status of the species to indicate that the species will go extinct during the normal listing process timeframes.

DESCRIPTION OF MONITORING

No formal monitoring, research, further work on a conservation agreement, or other prelisting conservation activity has been conducted for *A. tortipes* since the survey in 2000. Offers from the National Park Service and the Service to conduct field visits in 2002 and 2003 were not accepted by the Tribe (Wiese 2002). Plant locations were surveyed and documented by the tribal Environmental Office in 2010 (Clow 2010, pers. comm.).

COORDINATION WITH STATES

The Colorado Natural Areas Program and the CNHP have not acquired any new information about the species in 2010.

LITERATURE CITED

Anderson, J.L., and J.M. Porter. 1994. *Astragalus tortipes* (Fabaceae), a new species from desert badlands in southwestern Colorado and its phylogenetic relationships with Astragalus. Systematic Botany 19(1):116-125.

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Personal Communications

Clow, S. 2008. Telephone interview with Scott Clow, Environmental Program Director, Ute Mountain Ute Tribe, in Towaoc, Colorado (March 12, 2008).

Clow, S. 2010. Meeting with Scott Clow, Environmental Program Director for Ute Mountain Ute Tribe, J. Jojola, Regional BIA Biologist, and others in Towaoc, Colorado (April 8, 2010).

Greenwood, K. 2009. E-mail from Service tribal liaison describing a telephone conversation with Scott Clow, Environmental Program Director, Ute Mountain Ute Tribe, Towaoc, Colorado (March 31, 2009). 1 p.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: _____ 5/26/10
Deputy Regional Director, Fish and Wildlife Service Date

Concur: _____ Date: October 22, 2010
ACTING
Director, Fish and Wildlife Service

Do not concur: _____ _____
Director, Fish and Wildlife Service Date